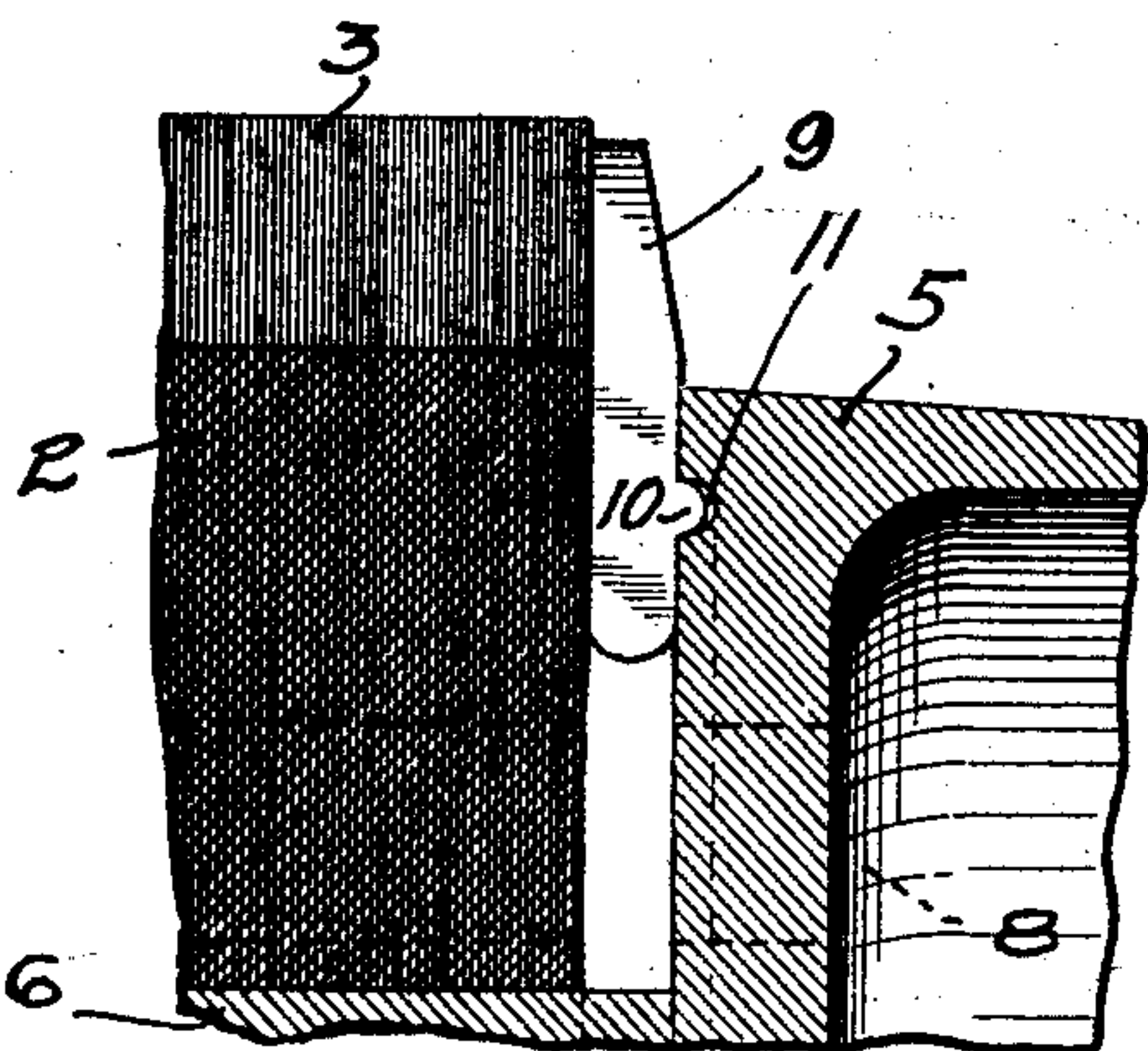
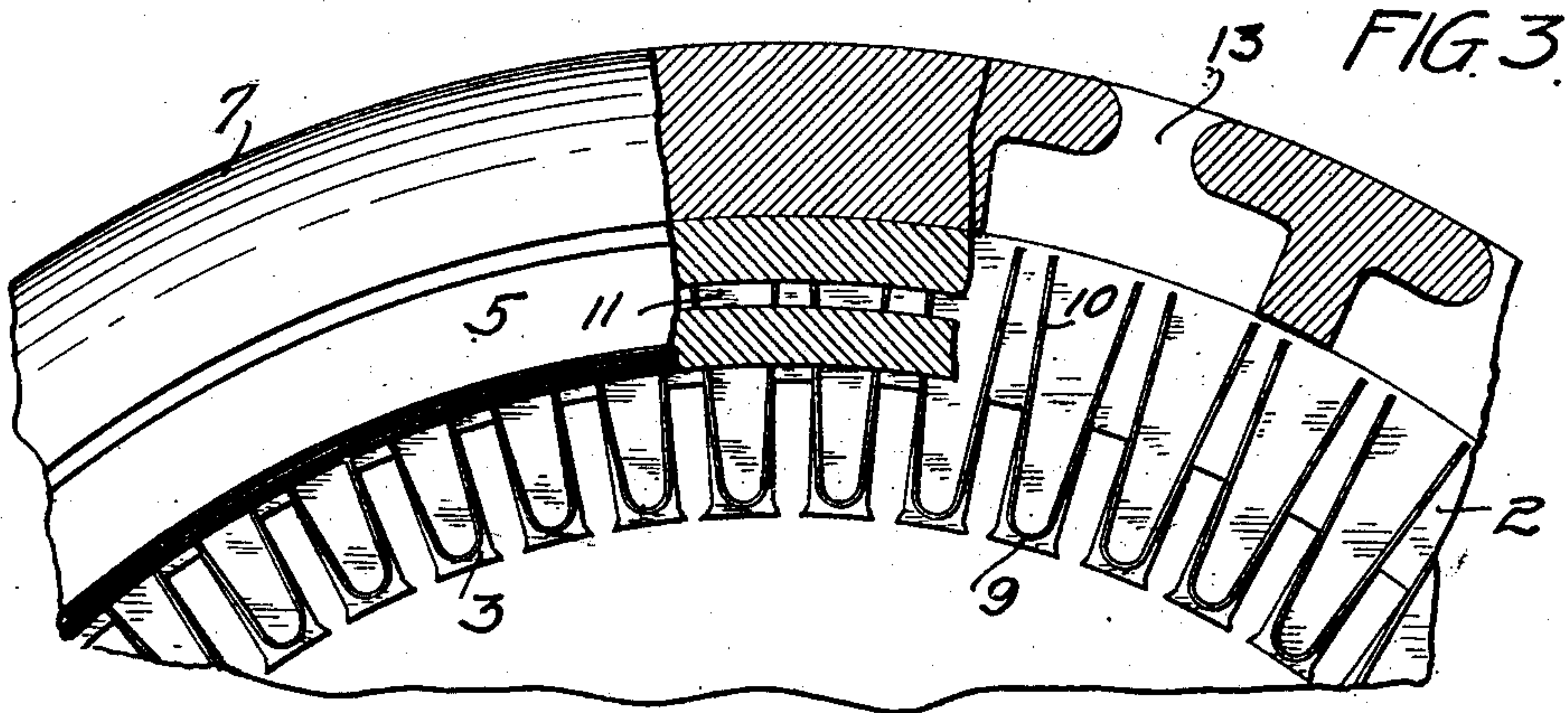
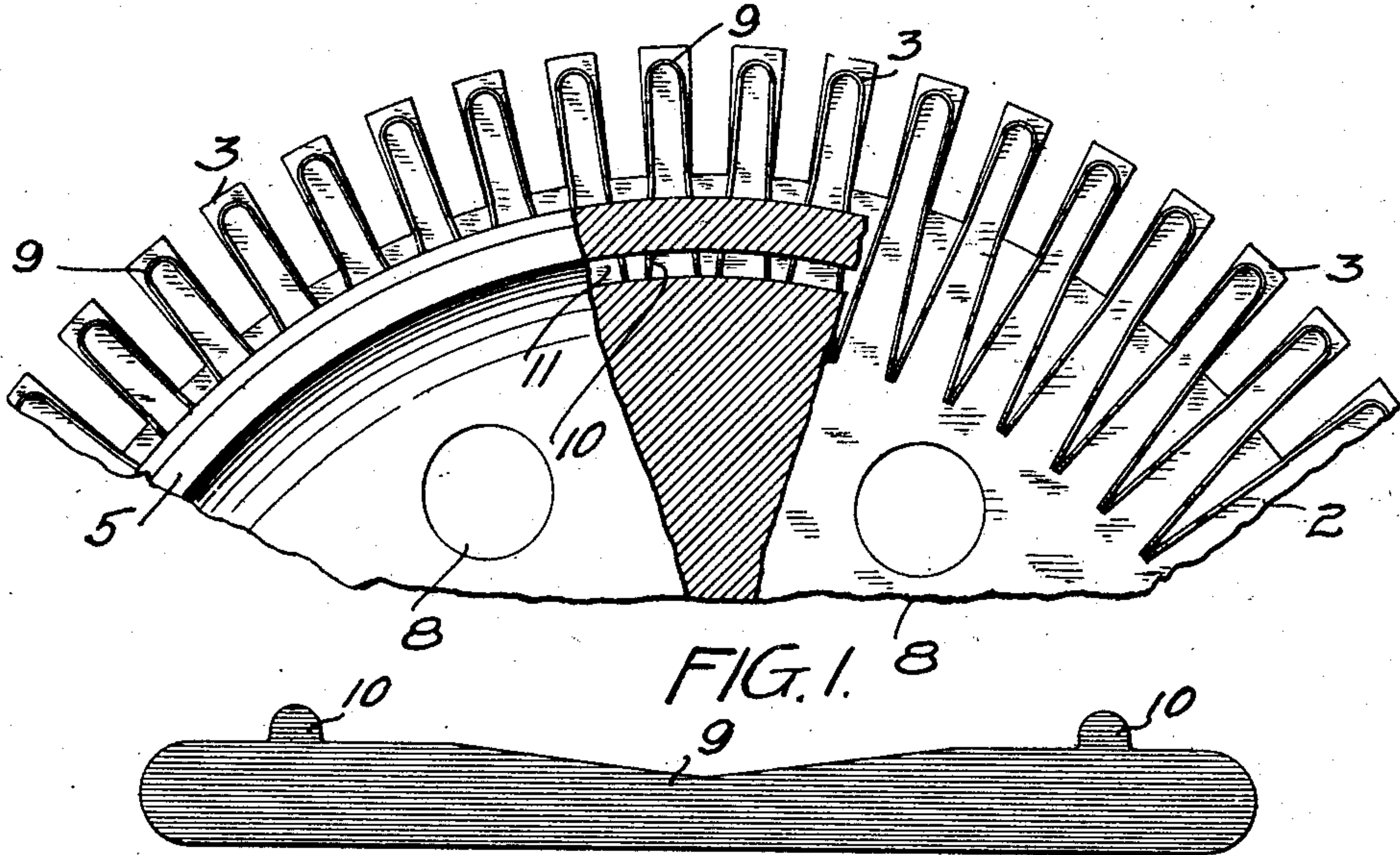


T. HIBBARD.
VENTILATING SUPPORT FOR ARMATURE TEETH.
APPLICATION FILED NOV. 17, 1905.

917,064.

Patented Apr. 6, 1909.



WITNESSES
M. M. *[Signature]*
M. E. Scott.

FIG. 2.

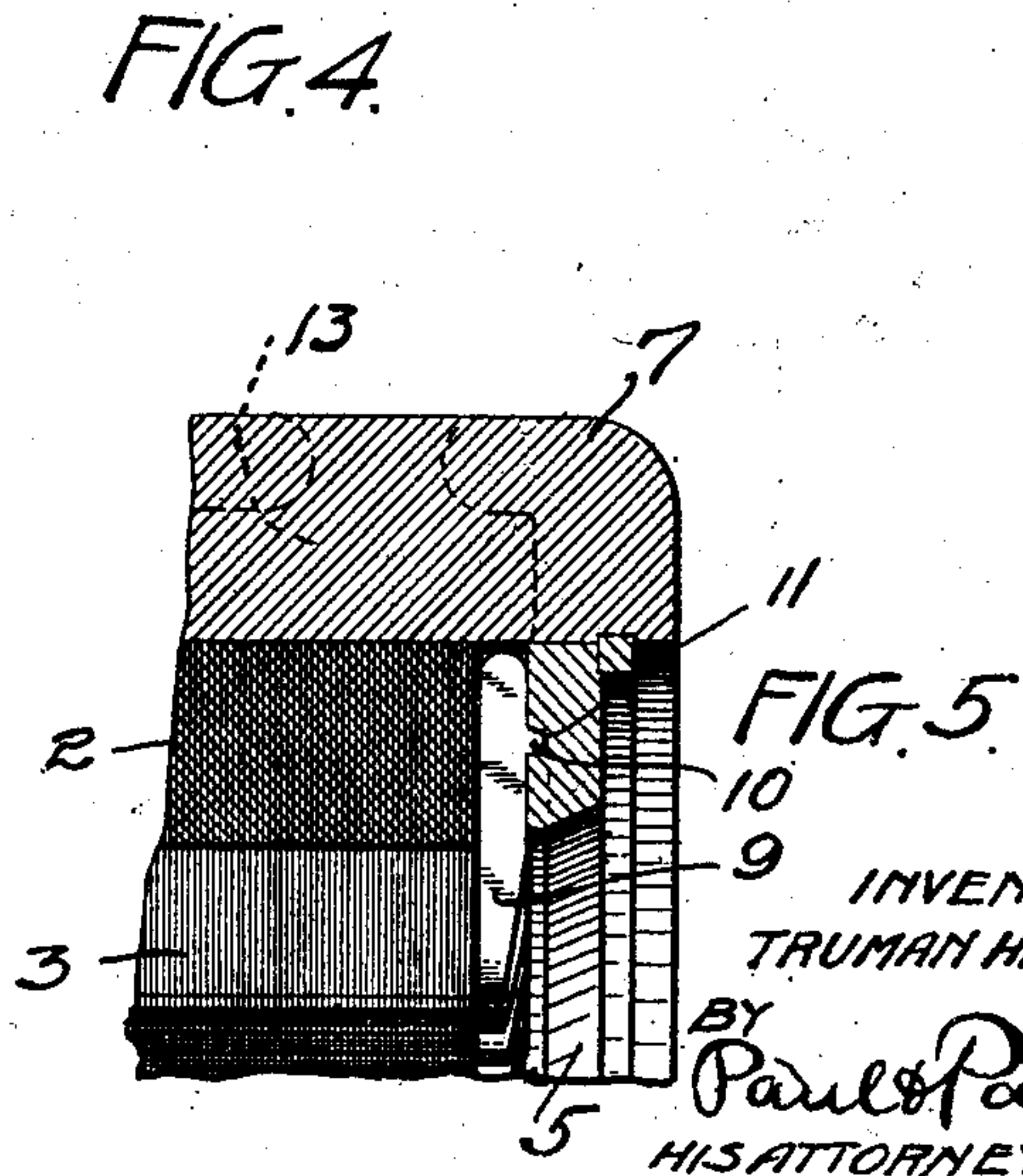


FIG. 5.

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UNITED STATES PATENT OFFICE

TRUMAN HIBBARD, OF MINNEAPOLIS, MINNESOTA.

VENTILATING-SUPPORT FOR ARMATURE-TEETH.

No. 917,064.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed November 17, 1905. Serial No. 287,861.

To all whom it may concern:

Be it known that I, TRUMAN HIBBARD, of Minneapolis, Hennepin county, Minnesota, have invented certain Improvements in Ventilating-Supports for Armature-Teeth, of which the following is a specification.

This invention relates to improvements in ventilating supports for the armature teeth of dynamo-electric machines and the objects I have in view are to provide a simple and inexpensive ventilating tooth support, that may be readily applied between the laminae composing the armature and the end plates or rings by which the laminae are clamped and secured together, whereby the armature teeth are supported and a free circulation of the air between said laminae and the end plates or rings is secured. This ventilating support is applicable either to a rotating or to a stationary armature.

The invention consists generally in the constructions and combinations hereinafter described and particularly pointed-out in the claims.

In the accompanying drawings forming a part of this specification, Figure 1 is a partial end elevation and section of a rotatable armature having my improved ventilator applied thereto. Fig. 2 is a longitudinal section of the same, showing the means for holding the ventilator in position. Fig. 3 is a plan view showing the ventilator as it is stamped out of a piece of sheet metal and before it is bent into staple or U-shape. Fig. 4 is a partial elevation and section of a ring armature such as is used with a rotating field magnet. Fig. 5 is a longitudinal section through the structure shown in Fig. 4.

In all the drawings 2 represents a series of laminae of which the body of the armature is composed. These laminae are provided with the teeth or projections 3, between which are the spaces for receiving the longitudinal windings of the electrical conductors. In the structure shown in Figs. 1 and 2 these teeth project outwardly. In all of the drawings 5 represents the end rings or plates by means of which the laminae are clamped and held together. I have illustrated but one of these end arms or plates, but it will be understood that another is provided which may be identical with the one shown between which the laminae 3 are arranged. In the structure shown in Figs. 1 and 2 the laminae are arranged upon a central shaft or

support 6, while in the structure shown in Figs. 4 and 5 they are arranged within a cylindrical frame or support 7. In either instance the laminae will preferably be separated at intervals by suitable ventilators such, for example, as shown and described in an application for patent executed of even date herewith by James T. Boustead, Charles H. Chalmers and myself filed November 17, 1905, Serial No. 287,862.

The end plates 5 of the structure shown in Figs. 1 and 2 are provided with suitable ventilating openings 8, which are connected by radial grooves with a ventilating space of annular form, extending around the end plate 5 and between said plate and the wall of the nearest lamina. For the purpose of supporting the teeth of the laminae and providing ventilating spaces extending outward beyond the circumference of the plate 5, I provide the staple or U-shaped ventilating tooth supports 9, one of said supports being arranged between each tooth of the outside lamina and the inner wall of the plate 5. These ventilating supports are preferably provided with the projections 10 which are engaged in an annular groove in the inner surface of the plate 5, (see Figs. 1 and 2). It will be seen that these ventilating supports do not in any way interfere with the winding of the armature as the spacing between the teeth of the laminae are left entirely free while at the same time each tooth is supported and there is a free circulation of air from the openings 8 into the ventilating space between the inner surface of the plate 5 and the outside lamina and outward through the spaces between the legs of the staple or U-shaped ventilator. These ventilating supports engage each tooth of the outside lamina, which, owing to the fact that the laminae are formed of very thin material would not, unless so supported, retain its position, but would become bent over the outer edge of the plate 5 and away from the body of the armature.

In Figs. 4 and 5 the ventilating supports are arranged between the ring 5 and the annular outside lamina. Said supports extend inward bearing against each tooth of the outside lamina and they are held in position by the projections 10 thereon engaging the annular groove 11 in the ring 5. In this instance ventilating openings 13 are formed in the frame or support 7, and said openings

communicate with the space between the clamping ring 5 and the outside lamina. The air passage is formed the same as before between the legs of the staple shaped support, and the location of said support against the teeth of the outside lamina prevents interference with the spaces in which the electrical conductors are wound.

The great saving which this invention effects, is in providing an inexpensive ventilating tooth support which, when made of only one size, is universally applicable to any size of armature, in a given type, and armatures having any number of teeth, thus avoiding a multiplicity of styles and sizes, which would be necessary, were the supports for two or more teeth made in one piece.

The saving of pattern expense, and the expense of keeping various styles, with different numbers of teeth, on hand to meet different requirements, constitute the great utility of this invention, aside from its ventilating function. That is to say: this ventilating tooth support, made in a given size is universally applicable to armatures whose spaces for the longitudinal windings between the teeth or projections, differ widely, both as to number and as to dimensions. These supports also prevent vibration of the armature teeth, due to variation of magnetic density, or other causes, which vibration

would tend to injure the insulation of electrical conductors adjacent thereto.

I claim as my invention:

1. The herein described ventilating tooth support for armatures consisting of a staple or U-shaped piece of metal having projections upon one edge thereof.

2. In an armature, having a series of laminæ provided with peripheral teeth or projections spaced from one another, an end plate having an annular groove in its inner surface, U-shaped supports interposed between said end plate and the teeth of said laminæ, said supports having projections thereon adapted to enter said annular groove.

3. In an armature having a series of laminæ provided with peripheral teeth or projections, spaced from one another, an end plate, U-shaped supports interposed between said end plate and the teeth of the laminæ, said supports and said plate having coöperating means for holding said supports in place between said plate and teeth, substantially as described.

In witness whereof, I have hereunto set my hand this 14th day of November 1905.

TRUMAN HIBBARD.

Witnesses:

A. C. PAUL,
RICHARD PAUL.